

Superfund Program
Proposed Plan

U.S. Environmental Protection Agency
Region II

Rockaway Borough Wellfield
Superfund Site

August 2007

SDMS Document



98641



EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the Preferred Alternative for addressing soils at one of the groundwater contamination source areas at the Rockaway Borough Wellfield Superfund site and provides the rationale for this preference. This particular source area is known as the Klockner and Klockner (K&K) Area. The U.S. Environmental Protection Agency (EPA) evaluated a number of remedial measures to address contaminated soil, which is the source of the groundwater contamination. As explained below, the Preferred Alternative for addressing the Volatile Organic Compound (VOC)-contaminated soil is Soil Vapor Extraction and Excavation, and Off-Site Treatment/Disposal. For the lead-contaminated soil, the Preferred Alternative is Excavation and Off-Site Treatment/Disposal.

This Proposed Plan will also serve as a notice that the operable unit designation for the Wall Street/East Main Street source area, which was the subject of a Record of Decision (ROD) signed on September 29, 2006, will be changed from Operable Unit 3 (OU3) to Operable Unit 4 (OU4). The change is to clarify how funding for the remedy will be accounted for by EPA.

The Proposed Plan includes summaries of all the soil cleanup alternatives evaluated for use at this site. EPA, the lead agency for site activities, issues this document. The New Jersey Department of Environmental Protection (NJDEP) is the support agency. EPA, in consultation with NJDEP, will select a final remedy for the site after reviewing and considering all information submitted during the 30-day public comment period. EPA, in consultation with NJDEP, may modify the Preferred Alternative or select another response

Dates to remember:

MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD:

August 16 – September 15, 2007

EPA will accept written comments on the Proposed Plan during the public comment period.

PUBLIC MEETING: August 23, 2007 - 7:00 pm

EPA will hold a public meeting to explain the Proposed Plan. EPA will also accept oral and written comments at the meeting. The meeting will be held at **Rockaway Borough Community Center, 21-25 Union Street, Rockaway, New Jersey**. Prior to the start of the meeting, EPA will be available from 6:00 p.m. to 7:00 p.m. to answer questions.

For more information, see the Administrative Record at the following locations:

U.S. EPA Records Center, Region II
290 Broadway, 18th Floor
New York, New York 10007-1866
(212)-637-3261
Hours: Monday-Friday – 9:00 am to 5:00 pm

Rockaway Borough Free Public Library
82 East Main Street
Rockaway, NJ 07866
(973) 627-5709
Hours: Monday & Wednesday – 12:00 to 8:00 PM
Tuesday, Thursday and Friday – 10:00 am to 8:00 pm
Saturday – 10:00 am to 2:00 pm

Written comments and questions regarding the Rockaway Borough Wellfield site, postmarked by no later than September 15, 2007, may be sent to:

Brian Quinn, Project Manager
U.S. Environmental Protection Agency
290 Broadway, 19th Floor
New York, New York 10007-1866
Tel: (212) 637-4381
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For further information, please see the Rockaway Borough Wellfield Superfund Site website:

www.epa.gov/region02/superfund/npl/rockaway

action presented in this Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Proposed Plan.

EPA is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA) and Section 300.430(f) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan summarizes information that can be found in greater detail in the Operable Unit 3 (OU3) Remedial Investigation/Feasibility Study (RI/FS) reports and other site-related documents contained in the Administrative Record file for this site. EPA encourages the public to review these documents to gain a more comprehensive understanding of the Rockaway Borough Wellfield Site and the Superfund process.

SITE HISTORY

The Rockaway Borough Wellfield Site is located in Rockaway Borough in Morris County, New Jersey (See Figure 1). The approximately 2.1 square-mile Rockaway Borough is situated in the center of Morris County, approximately 10 miles north of Morristown and 20 miles northwest of Newark in the north-central portion of the state. It is bordered to the north and west by Rockaway Township and to the east and south by Denville Township. Land use in the Borough is a mix of commercial, industrial, and residential.

The Rockaway Borough Wellfield Superfund Site includes three municipal water supply wells (Nos. 1, 5, and 6), which are located in the eastern section of the Borough. The municipal wells range in depth from 54 to 84 feet below ground surface (bgs) and are located in a glacial aquifer. EPA designated the aquifer a sole source aquifer for the Borough and surrounding communities. The wells supply potable water to approximately 11,000 people.

In 1981, the Borough installed a granular carbon treatment system after contamination was discovered in the municipal water supply system. The principal contaminants found in the glacial aquifer include volatile organic compounds (VOCs), primarily tetrachloroethene (PCE) and trichloroethene (TCE). In 1993, an air stripping system was added to improve the treatment of the contaminated groundwater and reduce operating costs.

The K&K Area is a portion of the larger Rockaway Borough Wellfield Superfund Site. The sources of the TCE and PCE contamination are the K&K property and a dry cleaning operation.

In 1985, the NJDEP initiated a Phase I RI/FS. The Phase I report concluded that contamination of the municipal water supply was emanating from multiple source areas within the Borough. Based on the findings of the 1986 RI/FS, EPA initiated a Phase II RI/FS to identify the contaminant sources, further delineate the full extent of contamination and evaluate remedial action alternatives to address the sources of contamination. Some of the major findings and conclusions of the Phase II RI/FS were as follows:

- Groundwater in the northeast portion of Rockaway Borough was contaminated with VOCs, primarily TCE and PCE.
- Groundwater in the Wall Street/East Main Street (WS/EM) Area contaminated with PCE was affecting Municipal Wells No. 1 and 5. However, the source area was not identified.
- Groundwater contaminated with TCE was emanating from the K&K property and impacting the Rockaway Borough Well Field, specifically Municipal Well No. 6.

The remedy selected in a September 30, 1991 ROD called for extraction and treatment of two areas of groundwater contamination referred to as the K&K and WS/EM plumes. The remedy also called for further investigations to determine the source of the plumes. On September 27, 1995, EPA entered into an Administrative Order on Consent with K&K to conduct an RI/FS for the K&K Area. In 2003, an RI/FS for the K&K Area was begun.

The K&K Area is primarily a light industrial area in northwest Rockaway Borough. The K&K Area consists of two separate properties. The first property is located north of Stickle Avenue and is referred to as the "Building 12 property." The second portion of the K&K Area referred to as the "Building 13 property" is located south of Stickle Avenue.

The developed portions of the K&K Area are mostly covered by impervious surfaces including roadways, driveways, parking areas, concrete buildings and sidewalks. A limited number of small areas of exposed soils are present in the K&K Area.

CURRENT STATUS

A private party is presently performing the groundwater cleanup for the K&K plume. Construction of the groundwater extraction and treatment system has been completed, and operation of the system began in January 2006.

The Remedial Design for the WS/EM plume Area, which was completed in February 2006, included development of engineering drawings and specifications. The U. S. Army Corps of Engineers, under an agreement with EPA, will be constructing the system. Construction of the groundwater extraction and treatment system began in April 2007.

An RI/FS for the WS/EM Area has been completed, and a Record of Decision was issued on September 29, 2006. An RI/FS has been completed that characterizes the K&K Area. The K&K Area RI/FS is the subject of this Proposed Plan.

SITE CHARACTERISTICS

There have been numerous investigations conducted at the Rockaway Borough Wellfield Superfund site to define the nature and extent of groundwater contamination, examine potential migration routes by which contamination could reach the Borough's Wellfield, and to identify potential sources of contamination.

The following discussion relates only to the results of the source area RI/FS conducted at the K&K Area.

A total of 54 soil gas sample locations were field screened for the presence of contamination. Based on the results of the soil gas samples, samples were then collected from the soil. In general, the samples were analyzed for VOCs, semivolatile organic compounds, pesticides, and metals. VOCs and lead are the only contaminants of concern at the site. Therefore, the investigations focused on just the nature and extent of VOCs and lead. A summary of the findings for the media sampled is presented below.

Soil Contamination Adjacent to Buildings

Soils (less than 5 feet below ground surface (bgs)) were sampled at 12 boring locations, along with three duplicate samples (for a total of 15 soil samples). While three individual VOCs were detected in the surface soils, PCE and TCE were the only constituents that exceeded the NJDEP Impact to Groundwater Soil Cleanup Criteria ("Impact to Groundwater Criteria").

PCE and TCE occurred at concentrations exceeding each of their most conservative criteria [the NJDEP Impact to Groundwater Criteria 1 milligram per kilogram (mg/kg)] in surface soil samples. The most elevated concentrations of PCE and TCE occurred at the Building 12 property. Lead was also detected in the surface soil at the Building 12 property at concentrations that exceeded the New Jersey Residential Direct Contact Soil Cleanup Criteria of 400 mg/kg ("Direct Contact Criteria").

Soil Contamination Beneath Building 12

Soils (5 feet to about 12 feet bgs) were sampled at thirteen locations for a total of 24 subsurface soil samples.

Although 10 VOCs were detected, TCE and PCE each exceeded the most conservative criteria (i.e., 1 mg/kg) in six depth interval samples from 13 boring locations beneath Building 12.

WHAT ARE THE POTENTIAL "CONTAMINANTS OF CONCERN"?

TCE and PCE were detected at the Site above the NJDEP Impact to Groundwater Soil Cleanup Criteria. Lead was detected at the Site above the New Jersey Residential Direct Contact Soil Cleanup Criteria. Based on validity of the analytical results, frequency of occurrence, toxicological, physical, and chemical characteristics, the Baseline Human Health Risk Assessment identified only TCE, PCE and lead as Contaminants of Concern.

WHAT IS A "PRINCIPAL THREAT"?

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP Section 300.430(a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water or air, or acts as a source for direct exposure. Contaminated groundwater generally is not considered to be a source material; however, Non-Aqueous Phase Liquids (NAPLs) in groundwater may be viewed as source material. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of the alternatives using the nine remedy selection criteria. This analysis provides a basis for making a statutory finding that the remedy employs treatment as a principal element

Contaminated groundwater is generally not considered to be a "principal threat." However, the source area associated with this Proposed Plan is considered to be a "principal threat" to the groundwater. This remedy will address this "principal threat," which acts as a source of groundwater contamination.

Summary

The nature and extent of soil contamination present in the K&K Area was assessed through sampling of surface and subsurface soils. In addition, an evaluation of available historical information and soil gas survey results was performed to assist in the determination of potential contaminant source areas.

TCE, PCE and lead are the primary contaminants at the K&K Area of the site. They are present at elevated concentrations in the soil (e.g., up to 65.9 mg/kg for TCE) specifically beneath and in the vicinity of Building 12 property and up to 4.28 mg/kg for PCE near the fence area of Building 13 property. Lead was detected up to 841 mg/kg in the vicinity of Building 12.

SCOPE AND ROLE OF ACTION

As in many complex Superfund sites, this site has been divided into three Operable Units (OUs) or phases. OU1 was the site-wide investigation to identify the contaminants in the Borough water supply. OU2 was created when the remedy was selected to treat the groundwater plumes. This action, referred to as OU3, is intended to be the final of two source area remedial actions for the site. Previously, a Record of Decision was signed for the OU4 source area located at the Wall Street/East Main Street Area. This Proposed Plan summarizes the remedial alternatives detailed in the Feasibility Study, and discusses the preferred alternative for addressing contaminated soil at OU3.

Human Health Risk Assessment:

A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these under current and future land uses. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: In this step, the chemicals of potential concern (COPCs) at the site in various media (i.e., soil, groundwater, surface water, and air) are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil and ingestion of and dermal contact with contaminated groundwater. Factors relating to the exposure assessment include, but are not limited to, the concentrations in specific media that people might be exposed to and the potential frequency and duration of exposure. Using these factors, a "reasonable maximum exposure" scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure and severity of adverse effects are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other non-cancer health effects, such as changes in the normal functions of organs within the body (e.g., changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and non-cancer health effects.

Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks. Exposures are evaluated based on the potential risk of developing cancer and the potential for non-cancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one-in-ten-thousand excess cancer risk"; or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions explained in the Exposure Assessment. Current Superfund regulations for exposures identify the range for determining whether remedial action is necessary as an individual excess lifetime cancer risk of 10^{-4} to 10^{-5} , corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk. For non-cancer health effects, a "hazard index" (HI) is calculated. The key concept for a non-cancer HI is that a "threshold" (measured as an HI of less than or equal to 1) exists below which non-cancer health hazards are not expected to occur. The goal of protection is 10^{-6} for cancer risk and a HI of 1 for a non-cancer health hazard. Chemicals that exceed a 10^{-4} cancer risk of an HI of 1 are typically those that will require remedial action at the site and are referred to as Chemicals of Concern or COCs in the final remedial decision or Record of Decision.

SUMMARY OF SITE RISKS

As part of the RI/FS, EPA conducted a baseline risk assessment to determine the current and future effects of the contaminants on human health and the environment. The site is currently used as a commercial facility, and any future use is expected to be the same. Therefore, the baseline risk assessment focused on health effects that could result from current and future direct contact with contaminated surface and subsurface soils for populations typically associated with commercial facilities, i.e., site workers and future construction workers.

Ecological Risks

A Screening Level Ecological Risk Assessment (SLERA) was performed for the site. The SLERA determined that due to the lack of usable terrestrial habitat for ecological receptors at the site, risks would be low. Therefore, ecologically based screening criteria are not presented and will not be utilized to assist in the interpretation of the nature and extent of soil contamination at the K&K Area.

Human Health Risks

Human Health Risk Assessment Findings

The cancer risk and non-cancer health hazard estimates in the human health risk assessment (HHRA) are based on current reasonable maximum exposure scenarios and were developed by taking into account various health protective estimates about the frequency and duration of an individual's exposure to chemicals selected as chemicals of potential concern (COPCs), as well as the toxicity of these contaminants. (Please see the adjacent text box for an explanation of risk assessment terms).

The K&K Area is currently zoned for light industrial use. Future land use is expected to remain the same, although the unlikely possibility that the K&K Area would be developed into a recreational or residential area was also considered in the Human Health Risk Assessment (HHRA). The HHRA began by selecting chemicals of potential concern in the shallow and

deep soils that would be representative of site risks. The chemicals of concern for the K&K Area were PCE, TCE and lead in soil.

Based on current zoning and anticipated future use of the K&K Area, the HHRA focused on a variety of possible receptors: the current and future site worker and adolescent intermittent visitor; and the potential future construction worker, recreational user (adult and adolescent) and resident (adult and child). The HHRA concluded that the cancer risks and non-cancer hazards from exposure via incidental ingestion of, dermal contact with, and inhalation of constituents detected in the soil were within EPA's target risk range for carcinogens and below the Hazard Index (HI) of 1 for non-carcinogens for all populations evaluated under both current and future use scenarios, except for the future resident child. The HI for this receptor slightly exceeded the threshold of 1 from ingestion of TCE-contaminated soil. Although exposure to this receptor is considered highly unlikely given current land use, the non-cancer health hazard calculation supports the need for remediation at the site.

Due to the lack of toxicity values for lead, exposure was evaluated qualitatively. The maximum concentration of lead (841 mg/kg) exceeded both the health-based industrial and residential screening values of 800 mg/kg and 400 mg/kg, respectively. Therefore, exposure to site soils could result in adverse health effects.

Concentrations of PCE and TCE in soil indicate that there is potential for vapor intrusion into the on-site buildings from contaminated soil. Therefore, additional investigation of the vapor intrusion pathway is necessary and will occur during the remedial design phase.

A complete discussion of the exposure pathways and estimates of cancer risk and non-cancer hazard can be found in the *Human Health Risk Assessment* for the K&K Area in the information repository.

The cancer risks and non-cancer hazards for the receptors most likely to come in contact with

contaminated site soils are within or below EPA's acceptable values. However, in addition to exceeding EPA's screening values, the maximum concentration of lead also exceeds the New Jersey Residential and Non-residential Direct Contact Cleanup Criteria of 400 mg/kg and 600 mg/kg respectively. Furthermore, the soil concentrations of PCE and TCE are above the concentrations that are associated with an adverse impact to groundwater; thus, there is a need to address the soil through a remedial action. It is the EPA's judgment that the Preferred Alternative identified in this Plan is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

Remedial Action Objectives

The overall remediation goal for this site is to protect human health and the environment. The remedial action objectives (RAOs) have been identified to mitigate the potential risks associated with the K&K Area.

The RAOs for the contaminated soil at the K&K Area are:

1. Reduce the potential for further migration of TCE/PCE from the contaminated soil into groundwater.
2. Remove Direct Contact exposure to lead-contaminated soil.

The Preliminary Remediation Goal (PRG) for TCE and PCE in soil was derived from the New Jersey Impact to Groundwater Soil Criteria and is 1 mg/kg. The PRG for lead in soil was derived from the and Residential Direct Contact Criteria of 400 mg/kg.

Summary of Remedial Alternatives

Based on technology screening and process option evaluation, the potential soil remedial alternatives developed for the site are as follows:

TCE/PCE:

- V-1: No Action
- V-2: Access and Use Restrictions
- V-3: Capping, and Access and Use Restrictions;
- V-4: Excavation and Off-Site Treatment/Disposal;
- V-5: Soil Vapor Extraction, Excavation and Off-Site Treatment/Disposal; and
- V-6: Chemical Oxidation, Soil Vapor Extraction, and Excavation with Off-Site Treatment/Disposal.

Lead:

- L-1: No Action;
- L-2: Access and Use Restrictions;
- L-3: Capping, and Access and Use Restrictions; and
- L-4: Excavation and Off-Site Treatment/Disposal.

TCE/PCE Contaminated Soil Alternatives

Alternative V-1: No Action

Estimated Capital Cost: \$0

Estimated Annual O&M Cost: \$0

Estimated Present Worth: \$0

Estimated Construction Time Frame: None

Regulations governing the Superfund program require that the "no action" alternative be evaluated to establish a baseline for comparison. Under this alternative, EPA would take no action at the site to prevent the migration of the contamination to the groundwater.

Because this alternative results in contaminants remaining on the site above levels that would not allow for unlimited use and unrestricted exposure, a review of the site at least every five years would be required.

Alternative V-2: Access and Use Restrictions

Estimated Capital Cost: \$41,050

Estimated Annual O&M Cost: \$0

Estimated Present Worth: \$41,050

Estimated Construction Time Frame: None

The Access and Use Restrictions Alternative would include implementation of administrative controls such as deed notices. The deed notices, or comparable administrative control, would be implemented to ensure that future activities at the K&K Area (e.g., excavation) would be performed with knowledge of the K&K Area conditions and implementation of appropriate health and safety controls.

Because this alternative results in contaminants remaining on the site above levels that would not allow for unlimited use and unrestricted exposure, a review of the site at least every five years would be required.

Alternative V-3: Capping, and Access and Use Restrictions

Estimated Capital Cost: \$88,750

Estimated Annual O&M Cost: \$0

Estimated Present Worth: \$88,750

Estimated Construction Time Frame: 3-6 months

This alternative includes capping contaminated soil areas with asphalt or concrete. The Access and Use Restrictions would include implementation of administrative controls such as deed notices. The deed notices, or comparable administrative control, would be implemented to ensure that future activities at the K&K Area (e.g., excavation) would be performed with knowledge of the K&K Area conditions and implementation of appropriate health and safety controls.

Because this alternative results in contaminants remaining on the site above levels that would not allow for unlimited use and unrestricted exposure, a review of the site at least every five years would be required.

Alternative V-4: Excavation and Off-Site Treatment/Disposal

Estimated Capital Cost: \$650,860

Estimated Annual O&M Cost: \$0

Estimated Present Worth: \$650,860

Estimated Construction Time Frame: 3-6 months

In this alternative, accessible TCE and PCE-contaminated soils are removed via excavation.

Contaminated soil present beneath Building 12 would not be addressed.

The excavated material would be transported off-site for treatment and/or disposal, at a facility designed and permitted for disposal of TCE and PCE-contaminated soil. The estimated volume of impacted soil, based on information in the RI report, is approximately 1,300 cubic yards (yd³) for Building 12 and 120 yd³ for Building 13. However, additional action level exceedences could be detected during post-excavation confirmatory sampling, which could increase the scope during remedial construction.

Excavated soils would be analyzed for disposal parameters and would be containerized for off-site disposal. The excavated soils would be trucked off-site for treatment, as needed, and disposed of in accordance with federal and state regulations. Upon completion of contaminated soil removal, the excavation would be backfilled and compacted, and the surface would be restored.

Excavation would remove contaminated soil and meet the NJDEP Impact to Groundwater criteria, and post-excavation sampling would confirm that the criteria have been met.

Because this alternative is only expected to achieve the cleanup goals for a portion of the site and would leave hazardous substances, pollutants or contaminants remaining at the site, specifically under Building 12, above levels that would allow for unlimited use and unrestricted exposure, a review of the site at least every five years would be required.

Alternative V-5: Soil Vapor Extraction with Excavation and Off-Site Treatment/Disposal

Estimated Capital Cost: \$617,280

Estimated Annual O&M Cost: \$120,000

Estimated Present Worth: \$857,280

Estimated Construction Time Frame: 3-6 months

Estimated Time to Achieve RAO: 2 years

This alternative includes *in-situ* remediation via soil vapor extraction (SVE) at the Building 12 property in an effort to address the RAO by

removing TCE and PCE as a potential ongoing source of groundwater contamination. SVE would be used to remediate TCE and PCE in the unsaturated (vadose) zone soil. To implement SVE, a vacuum is applied to the soil through a series of wells to induce the controlled flow of air to remove VOCs from the soil. The captured vapors are then treated, usually by granular activated carbon, to applicable air standards. The estimated area of impacted soil, based on information provided in the RI Report, is approximately 19,000 ft².

An excavation would occur in parallel with the SVE system to remove approximately 150 yd³ of PCE-contaminated soil on the Building 13 property.

Excavated soils would be analyzed for disposal parameters and would be containerized for off-site disposal. The excavated soils would be trucked off-site for treatment, as needed, and disposed of in accordance with federal and state regulations. Upon completion of contaminated soil removal, the excavation would be backfilled and compacted, and the surface would be restored.

Excavation would remove contaminated soil and meet the NJDEP Impact to Groundwater criteria, and post-excavation sampling would confirm that the criteria have been met.

Because this alternative is expected to achieve the cleanup goals and not leave hazardous substances, pollutants or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, a five-year review may not be required.

Alternative V-6: Chemical Oxidation with Soil Vapor Extraction and Excavation with Off-Site Treatment/Disposal

Estimated Capital Cost: \$765,330

Estimated Annual O&M Cost: \$264,000

Estimated Present Worth: \$1,029,330

Estimated Construction Time Frame: 3-6 months

Estimated Time to Achieve RAO: 1 years

This alternative includes *in-situ* remediation via a combination of chemical oxidation with soil

vapor extraction (SVE) at the Building 12 property in an effort to address the RAO by removing TCE and PCE as a potential ongoing source of groundwater contamination. Chemical oxidation involves the injection of an oxidizing compound into the subsurface and then the SVE would be used to remediate the remaining TCE and PCE in the unsaturated (vadose) zone soil. To implement SVE, a vacuum is applied to the soil through a series of wells to induce the controlled flow of air to remove VOCs from the soil. The captured vapors are then treated to applicable air standards. The estimated area of impacted soil, based on information provided in the RI Report, is approximately 19,000 ft².

Excavation would occur in parallel with the SVE system to remove approximately 150 yd³ of PCE-contaminated soil on the Building 13 property. Excavated soils would be analyzed for disposal parameters and would be containerized for off-site disposal. The excavated soils would be trucked off-site for treatment, as needed, and disposed of in accordance with federal and state regulations. Upon completion of contaminated soil removal, the excavation would be backfilled and compacted, and the surface would be restored.

Excavation would remove contaminated soil and meet the NJDEP Impact to Groundwater criteria, and post-excavation sampling would confirm that the criteria have been met.

Because this alternative is expected to achieve the cleanup goals and not leave hazardous substances, pollutants or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, a five-year review may not be required.

Lead-Contaminated Soil Alternatives

Alternative L-1: No Action

Estimated Capital Cost: \$0

Estimated Annual O&M Cost: \$0

Estimated Present Worth: \$0

Estimated Construction Time Frame: None

Regulations governing the Superfund program require that the "no action" alternative be evaluated to establish a baseline for comparison. Under this alternative, EPA would take no action at the site to prevent direct contact with contaminated soil.

Because this alternative results in contaminants remaining on the site above levels that would not allow for unlimited use and unrestricted exposure, a review of the site at least every five years would be required.

Alternative L-2: Access and Use Restrictions

Estimated Capital Cost: \$18,000

Estimated Annual O&M Cost: \$0

Estimated Present Worth: \$18,000

Estimated Construction Time Frame: None

The Access and Use Restrictions Alternative would include implementation of administrative controls such as deed notices. The deed notices, or comparable administrative control, would be implemented to ensure that future activities at the K&K Area (e.g., excavation) would be performed with knowledge of the K&K Area conditions and implementation of appropriate health and safety controls.

Because this alternative results in contaminants remaining on the site above levels that would not allow for unlimited use and unrestricted exposure, a review of the site at least every five years would be required.

Alternative L-3: Capping with Access and Use Restrictions

Estimated Capital Cost: \$63,220

Estimated Annual O&M Cost: \$0

Estimated Present Worth: \$63,220

Estimated Construction Time Frame: 3-6 months

Estimated Time to Achieve RAO: 3- 6 months

This alternative includes capping contaminated soil areas with asphalt or concrete. The approximate area of lead soil contamination that would be capped at the Building 12 property is 360 ft². The Access and Use Restrictions would include implementation of administrative controls such as deed notices. The deed notices, or

comparable administrative control, would be implemented to ensure that future activities at the K&K Area (e.g., excavation) would be performed with knowledge of the K&K Area conditions and implementation of appropriate health and safety controls.

Because this alternative results in contaminants remaining on the site above levels that would not allow for unlimited use and unrestricted exposure, a review of the site at least every five years would be required.

Alternative L-4: Excavation and Off-Site Treatment/Disposal

Estimated Capital Cost: \$78,470

Estimated Annual O&M Cost: \$0

Estimated Present Worth: \$78,470

Estimated Construction Time Frame: 3-6 months

Estimated Time to Achieve RAO: 3-6 months

In this alternative, lead-contaminated soils are removed via excavation. The excavated material would be transported off-site for treatment and/or disposal, at a facility designed and permitted for disposal of lead-contaminated soil. The estimated volume of impacted soil, based on information in the RI report, is approximately 27 yd³. However, additional action level exceedences could be detected during post-excavation confirmatory sampling, which could increase the scope during remedial construction.

Excavated soils would be analyzed for disposal parameters and would be containerized for off-site disposal. The excavated soils would be trucked off-site for treatment, as needed, and disposed of in accordance with federal and state regulations. Upon completion of contaminated soil removal, the excavation would be backfilled and compacted, and the surface would be restored.

Excavation would remove contaminated soil and meet the PRG of 400 mg/kg for lead, and post-excavation sampling would confirm that the PRG has been met.

Because this alternative is expected to achieve the cleanup goals and not leave hazardous

substances, pollutants or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, a five-year review may not be required.

EVALUATION OF ALTERNATIVES

Nine criteria are used to evaluate the different remediation alternatives individually and against each other in order to select the best alternative. This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. The nine evaluation criteria are discussed below. A "Detailed Analysis of Alternatives" can be found in the Feasibility Study.

1. Overall Protection of Human Health and the Environment

Alternatives V-1 and L-1 would provide no protection of human health and the environment since the contamination is left on-site. Alternatives V-2 and L-2 would provide limited protection of human health and the environment by reducing potential risks by utilizing institutional controls. Alternatives V-3, V-4, V-5 V-6 as well as L-3 and L-4 would provide protection of human health and the environment by eliminating, reducing, or controlling risk through the removal or treatment of contaminated material. Alternative V-5 could also limit the migration of vapors into on-site buildings. Additional work to characterize the extent of the impact of subsurface vapors on on-site buildings will be done during the remedial design phase.

Because the "no action" alternatives (V-1 and L1) and the limited action alternatives (V-2 and L-2) are not protective of human health and the environment, they were eliminated from consideration under the remaining eight criteria.

2. Compliance with ARARs

Actions taken at any Superfund site must meet all Applicable or Relevant and Appropriate Requirements (ARARs) of federal and state law or provide grounds for invoking a waiver of these

requirements. These include chemical-specific, location-specific, and action-specific ARARs. There are no chemical-specific ARARs for soil, only To-Be-Considered cleanup numbers (TBCs). The New Jersey Impact to Groundwater Soil Criteria and New Jersey Residential Direct Contact Soil Cleanup Criteria are TBCs. Alternatives V-4, V-5, V-6 and L-4 would meet the TBCs for the contaminated soils. Alternatives V-3 and L-3 would not meet the TBCs for the contaminated soils. Location-specific ARARs would not be triggered for any of the alternatives. Alternatives V-4, V-5, V-6 and L-4 would attain action-specific ARARs for the contaminated soils, which would include RCRA transportation and disposal requirements.

3. Long-Term Effectiveness and Permanence

Of the remaining alternatives, the magnitude of residual risks is highest for Alternatives V-3 and L-3. Alternatives V-3 and L-3 both attempt to prevent direct contact as well as the migration of the ongoing source of groundwater contamination by utilizing a cap and using land use restrictions aimed at informing the public about potential hazards posed by exposure to contaminants in the soil. Alternatives V-5 and V-6 use excavation and *in-situ* treatment to reduce contaminant mass in the vadose zone. Alternatives V-4 and L-4 use excavation and off-site disposal to remove contaminant mass from the site. Alternatives V-4, V-5, V-6 and L-4 are all permanent remedies and effective in the long-term.

4. Reduction of Toxicity, Mobility, or Volume of Contaminants Through Treatment

Alternatives V-3 and L-3 would reduce direct contact as well as contaminant mobility without treatment by capping contaminated areas to reduce the infiltration of water through the contaminated soil. Alternatives V-4 and L-4 would reduce the toxicity, volume or mobility through the removal and treatment/disposal of soils at approved off-site facilities. Alternatives V-5 and V-6 would reduce toxicity, volume or

mobility through *in-situ* treatment and removal and disposal of soils at approved off-site facilities. For Alternatives V-4 and L-4, pre-disposal treatment, if necessary, could potentially reduce the toxicity and volume of the contaminated soils.

5. Short-Term Effectiveness

Alternatives V-3 and L-3 do not involve any physical treatment; there are no short-term risks to the community or workers as well as no environmental effects.

Alternatives V-4 and L-4 would present short-term risks to the community relating to exposure to contaminated soil. This exposure would be mitigated with the use of air monitoring, dust suppression, and restricted site access. Air monitoring, dust suppression, and a health and safety program would mitigate risks relating to inhalation exposure by workers. Excavation is anticipated to create minimal environmental effects since the K&K Area is highly developed.

Alternatives V-5 and V-6 would present short-term risks to the community relating to inhalation exposure that would be mitigated by air monitoring and engineering controls. Air monitoring and a health and safety program would mitigate risks relating to inhalation exposure by workers. The *in-situ* remediation is anticipated to create minimal environmental effects since the K&K Area is highly developed.

6. Implementability

Alternatives V-3 and L-3 could be easily implemented. Personnel and equipment necessary to perform these activities are readily available. Coordination with state and local governments would be required for implementing institutional controls. Coordination with state and local authorities would be required for five-year reviews.

Alternatives V-4 and L-4 would be easily implemented using conventional construction equipment and materials; however, some specialized techniques may be required for

excavation in close proximity to building foundations and would require coordination with state and local governments in addition to property owners and tenants. This alternative would also potentially impact businesses since the excavation would occur near buildings.

Alternatives V-5 and V-6 would be somewhat difficult to implement because of limited available space to install a treatment building or inject chemical oxidation under Building 12. Coordination with state and local governments in addition to property owners and tenants would be required for placement of extraction wells and associated treatment equipment.

7. Cost

The estimated present worth costs of the Alternatives are:

Alternative V-3 (Capping and Access and Use Restrictions): - \$88,750.

Alternative V-4 (Excavation with Off-Site Disposal): - \$650,860.

Alternative V-5 (Soil Vapor Extraction with Excavation): have capital costs until RAO is achieved - \$857,280

Alternative V-6 (Chemical Oxidation with Soil Vapor Extraction and Excavation with Off-Site Disposal): have capital costs until RAO is achieved - \$1,029,330

Alternative L-3 (Capping and Access and Use Restrictions): potential capital costs involved with the implementation of the institutional controls - \$63,220.

Alternative L-4 (Excavation with Off-Site Disposal): have capital costs until RAO is achieved - \$78,470.

8. State/Support Agency Acceptance

The State of New Jersey has concurred with EPA's Preferred Alternative presented in this Proposed Plan.

9. Community Acceptance

EPA will evaluate community acceptance of the Preferred Alternative after the public comment period ends. EPA will discuss community acceptance in the Record of Decision, the document that formalizes the selection of the remedy for the Area.

SUMMARY OF THE PREFERRED ALTERNATIVE

Based on the evaluation of remedial alternatives that was presented in the previous section, EPA has selected a combination of Alternatives V-5 and L-4 as its Preferred Alternative. These alternatives involve the use of an SVE system for contamination beneath a structure on the Building 12 property, excavation and off-site treatment/disposal of lead-contaminated soil near Building 12, and excavation and off-site treatment/disposal of contaminated soils near the fence area of the Building 13 property at the K&K Area.

The Preferred Alternative satisfies the remedial action objectives and the requirements of CERCLA, as amended, and the NCP. Alternative V-5 will require an estimated 1 to 2 years of operation for the remedy to meet the cleanup criteria, which are the New Jersey Impact to Ground Water Soil Cleanup Criteria. Alternative L-4 will require an estimated 3-6 months for the remedy to meet the cleanup criteria, which is the New Jersey Residential Direct Contact Criteria.

The Preferred Alternative provides the best balance of trade-offs among alternatives with respect to the nine CERCLA evaluation criteria. The Preferred Alternative is protective of human health and the environment, comply with ARARs and cleanup criteria, are cost-effective, and use permanent solutions and alternative treatment technologies or resource recovery technologies to

the maximum extent practicable. The Preferred Alternative also meets the statutory preference for the use of treatment as a principal element to the maximum extent practicable.

COMMUNITY PARTICIPATION

EPA provides information regarding the cleanup of the Rockaway Borough Wellfield Superfund site to the public through public meetings, the Administrative Record file for the site, and announcements published in the local newspaper. EPA and the state encourage the public to gain a more comprehensive understanding of the site and the Superfund activities that have been conducted there. The front page of this Proposed Plan shows the dates for the public comment period; the date, location, and time of the public meeting; and the locations of the Administrative Record files.

EPA Region 2 has designated a point-of-contact for community concerns and questions about the Superfund program. To support this effort, the Agency has established a 24-hour, toll-free number the public can call to request information, express concerns or register complaints about Superfund. The Public Liaison Manager for EPA's Region 2 office is:

George H. Zachos
Toll-free (888) 283-7626
(732) 321-6621

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